United Nations E/2016/74

Economic and Social Council

Distr.: General
2 June 2016

Original: English

2016 session
24 July 2015-27 July 2016
Agenda item 5
High-level segment

Discussions held during the nineteenth session of the Commission on Science and Technology for Development on the theme of the 2016 session of the Economic and Social Council, "Implementing the post-2015 development agenda: moving from commitments to results"

Note by the Secretary-General

On 19 December 2014, the President of the Economic and Social Council addressed letters to the Chairs of the functional commissions of the Council requesting them to provide a contribution to the Council, for its consideration at the high-level segment, on the theme of the 2016 session, "Implementing the post-2015 development agenda: moving from commitments to results".

The present note, prepared in response to that request, provides the Chair's summary of the discussions held at two events organized during the nineteenth session of the Commission on Science and Technology for Development, held in Geneva from 9 to 13 May 2016:

(a) Ministerial round table entitled "Implementing the post-2015 development agenda: moving from commitments to results";

(b) Panel discussion on the priority themes of the nineteenth session: "Smart cities and infrastructure" and "Foresight for digital development".

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Summary by the Chair of the discussions held during the nineteenth session of the Commission on Science and Technology for Development on the theme of the 2016 session of the Economic and Social Council, "Implementing the post-2015 development agenda: moving from commitments to results"

1. The Commission on Science and Technology for Development held its nineteenth session in Geneva, from 9 to 13 May 2016. On 9 May, a ministerial round table was convened on the theme "Implementing the post-2015 development agenda: moving from commitments to results" as a substantive contribution to the Economic and Social Council, for its consideration during the high-level segment on the same theme. On 11 May, the Commission held two panel discussions to discuss the two priority themes of the nineteenth session: "Smart cities and infrastructure" and "Foresight for digital development" (for the list of participants to the round table and the panel discussion see E/2016/31-E/CN.16/2016/4).

2. The participants highlighted the critical role of science, technology and innovation at all levels of implementation of the 2030 Agenda for Sustainable Development. Member State representatives highlighted the key areas, in their specific national contexts, where science, technology and innovation could make the biggest contribution. Some of the critical areas highlighted included, inter alia, reducing poverty, creating new jobs, increasing economic competiveness, mitigation and adaptation efforts related to climate change, reducing the risk of natural hazards and disasters, creating sustainable urbanization, promoting cleaner sources of energy, addressing health issues, ensuring the sustainability of production and consumption patterns, creating a fair and just society, increasing agricultural productivity and ensuring food security. The fact that those issues overlapped and covered elements of all the Sustainable Development Goals, underscored the fact that without a strong push for improvements in science, technology and innovation, the Goals cannot be attained.

3. The discussions of the round table revealed some important priority considerations for policymakers to address in order to harness the full potential of science, technology and innovation in transforming the promises reflected in the Sustainable Development Goals into results. The issues include nationalizing and contextualizing the Goals, the bridging of technological and digital divides, building capacity in basic science and innovation culture, increasing financial investment and strengthening complementary infrastructure to promote science, technology and innovation, exploring the gender dimensions of the Goals, making sustainable urbanization a key agenda for the local science, technology and innovation community, using technology foresight effectively to maximize benefits and minimize the risk of technology, promoting new models of collaboration in science, technology and innovation, fully exploiting synergies between all United Nations efforts relating to science, technology and innovation and improving the science-policy interface. The present summary elaborates upon those themes.

Nationalizing and contextualizing the Sustainable Development Goals

4. The first step identified by many countries in the implementation of the 2030 Agenda for Sustainable Development is that of nationalizing and contextualizing the

Sustainable Development Goals at the country level. The process needed to be launched as a matter of urgency within all countries, with the involvement of all relevant stakeholders. Participants gave several examples of how they planned to integrate the Goals within national development plans and vision documents. For example, in Botswana, the eleventh national development plan and a new national development vision document would be launched in the upcoming year. The key policy documents would take on board the development framework outlined in the 2030 Agenda. Ethiopia would also be giving great emphasis to the Goals as the country embarked on the development of its next national development plan. In that process, the local science, technology and innovation community would have an important role to play, especially in terms of identifying which targets of the Goals would be locally relevant and in terms of monitoring them. Furthermore, the national innovation strategies and science, technology and innovation policies needed to be reviewed so that the Goals were integrated as priorities within them.

Bridging of technological and digital divides

5. Participants noted that while progress has been made in terms of closing the technological gap in many parts of the world, a considerable technological divide existed between and within countries. The digital divide between and within countries was a case highlighted by several participants. Such divides often act impediments to harnessing the potential of science, technology and innovation for such processes as the implementation of the Sustainable Development Goals. Some important ways to bridge the technological divide were highlighted, such as the strengthening of human resources by empowering those entering or in the labour market with required skills, especially in the fields of science, technology, engineering and mathematics, the strengthening of intellectual property rights and enabling affordable access to high impact technology for developing countries, through international collaborations.

Building capacity in basic science and promoting a culture of innovation

6. The importance of basic science, research capacity and a culture of innovation within a country cannot be overemphasized. Many participants noted that the lack of capacity in basic science and research is limiting the potential of science, technology and innovation to address development problems, especially in developing countries. Some countries raised concern that this might in fact compromise the attainment of the Sustainable Development Goals. Several participants reported on their efforts at the national level to strengthen such fundamental science, technology and innovation capacities. Efforts included promoting education in science, technology, engineering and mathematics at all levels and the setting up of research and development institutions and laboratories. Ethiopia reported on conducting a successful research and development and innovation survey at the national level to identify and address national science, technology and innovation capacity gaps. Sri Lanka revealed its plans to set up a national biotechnology laboratory to support the biotechnology innovation ecosystem of the country. Finally, participants emphasized the need for new curricula to give hands-on training to students and transform them into problem solvers. In the United States of America, the "Beyond traditional borders" initiative provided students with the opportunity to learn about health-care issues in the developing world and to design and implement health-care technologies and

educational programmes to address such issues. Another case that was discussed was that of "makerspaces" in schools in Armenia, as a way of exposing young schoolchildren to scientific research and innovation at an early stage.

Increasing financial investment and strengthening complementary infrastructure to promote science, technology and innovation

7. Participants highlighted the need to earmark and divert funding towards developing technological capacity that would have a strong impact on sustainable development. In that context, Morocco reported on recent efforts to boost clean alternative energy technologies, especially solar energy, in order to fuel green industrialization of the country using home-grown skills. The aim of the project, supported by the Government, is to make solar energy provide 40 per cent of Morocco's energy use in the near future. Along similar lines, Sweden is aiming to become the first world's first fossil-free welfare nation, by actively promoting cleaner energy. At the same time, the importance of developing complementary infrastructure to promote progress in science, technology and innovation was highlighted. For example, in biotechnology laboratories in Ghana, 30 per cent of the budget was spent on electricity, especially on maintaining generators owing to erratic power supply. With a more reliable power supply, more resources could be dedicated to the core functions of the laboratories. The need for a solid infrastructure for information and communications technology was highlighted as a prerequisite for a well-functioning science, technology and innovation ecosystem. The participants shared details of the digital strategies of Chile, Morocco, Rwanda and Sri Lanka and the Global Connect multi-stakeholder initiative launched by the United States, all of which aim to strengthen the backbone of the information and communications technology infrastructure. Among other complementary aspects of infrastructure highlighted by participants were the need for strong legal and institutional infrastructure to support and enable a culture of innovation within a country.

Exploring the gender dimensions of the Sustainable Development Goals

8. In the context of the Sustainable Development Goals, there was an urgent need to address the gender dimensions at all levels, from problem definition, priority-setting, funding decisions, gender integration, research methodology and the establishment of metrics to the measurement of impact. Science, technology and innovation could play a key role in mainstreaming gender issues in the path towards achieving the Goals. For instance, in cities, the data collected from various smart infrastructures could be used by the local science, technology and innovation community to design infrastructure systems that meet the specific needs of women users. Bringing women and girls into education in science, technology, engineering and mathematics and into related fields would be a crucial way to harness science, technology and innovation for achieving the Goals. There was a proposal to revisit and reassess the past work of the Commission on Science and Technology for Development on gender and science, technology and innovation[1] in the context of the Millennium Development Goals, in order to derive policy lessons in the context of the Sustainable Development Goals. New curricula that emphasize the scope of

[1] See, for example, United Nations Conference on Trade and Development, "Applying a Gender Lens to Science, Technology and Innovation", UNCTAD Current Studies on Science, Technology and Innovation, No. 5, available from http://unctad.org/en/pages/PublicationArchive.aspx?publicationid=1450.

science, technology and innovation in solving sustainable development problems were recommended as a way to attract more women into the field of science, technology, engineering and mathematics.

Making sustainable urbanization a key agenda item for the local science, technology and innovation community

9. There was wide consensus among participants that without sustainable urban development there would be no sustainable development, as more than 50 per cent of the world's population currently lives in cities. In order to address emerging urban challenges, cities were embracing "smart city" visions and smart solutions. The role of the local science, technology and innovation community would be crucial in enabling such sustainable urbanization efforts through, inter alia, helping to develop locally relevant smart infrastructure and helping to design inclusive infrastructure that would meet the needs of the marginalized sections of society, including women, older persons and persons with disabilities. The science, technology and innovation community could also help to develop platforms for participatory governance and bottom-up governance processes, build requisite interdisciplinary skills and identify innovative ways to raise finances. Several Member States, including Austria, Chile, Thailand, India, China, the Islamic Republic of Iran, Cuba, Germany, Nigeria, Poland, Oman and the United Kingdom of Great Britain and Northern Ireland shared their national smart city projects and the role of the science, technology and innovation community in realizing such projects. Several caveats were raised during the discussions. For example, a panellist highlighted the need to balance citizens' rights to land and livelihoods with the economic imperative of smart cities and to integrate input from in-depth social research into "smart cities" agendas. Another panellist highlighted the need to break down complicated urban policies into simple rules and advocated creating an enabling environment for the scaling up of small-scale urban innovations. The specific smart city visions of the city of Chicago, United States, and of Kampala were shared by city administrators. Both experiences revealed that smart city projects and urban challenges presented an opportune platform for city administrators and the science, technology and innovation community to work together and create locally appropriate innovations.

Using technology foresight effectively to maximize the benefits and minimize the risk of technology

10. While technology could be a powerful enabler for sustainable development, it could also pose several risks and challenges. In that context, foresight could be a critical tool to help countries understand how technology evolves and how that knowledge could be leveraged for public policy. Foresight could help identify technological development and the impact thereof, but its most significant feature was that, when implemented in coherence with public policies, foresight could help to shape the future for countries in a desirable way. Countries shared experiences of the application of foresight in their national contexts. For example, Turkey explained that the national science, technology and innovation strategy was crafted using a technology foresight exercise and recommended the use of a multilayered integrated approach towards foresight exercises. In the United Kingdom, the relevance of foresight had been recognized many years earlier and it had been well institutionalized into policymaking. Some of the emerging digital trends, including

three-dimensional printing, big data, the "Internet of things", digital automation and massive open online courses, were discussed during the panel discussion. Those technologies held great potential for sustainable development. For example, they had been used to develop microinsurance products in Africa, predict the outbreak of diseases and promote the mass customization of products. In order to harness such benefits, however, countries would need both hard and soft complementary infrastructure. At the same time, emerging trends created risks associated with the disruption of employment patterns, data protection and privacy issues. One of the panellists reminded the audience to be mindful of the widening digital divide (when measured in terms of bandwidth) and of the limitations of big data, especially of the fact that big data is not forward looking. Another panellist stated that emerging digital trends tended to transfer risks to employees and that those welfare implications needed to be studied in greater detail. The visibility gap between North and South as regards the "Internet of things" and the low score of developing countries on the Networked Readiness Index, in terms of big data, were highlighted by another panellist. In order to mitigate such gaps, the panellist called for efficient capacity-building, a strong willingness to support emerging technologies, support for moving research from proof-of-concept to the local industry and designing regulations and policies suited to local needs.

Promoting new models of collaboration in science, technology and innovation

11. Participants called for new innovative models for collaboration in science, technology and innovation. Those should include, inter alia, North-South and South-South collaborations with the active participation of all relevant stakeholders. Participants highlighted some examples of new models of partnerships. The Global Connect multi-stakeholder partnership launched by the United States was a collaborative effort between 30 developed and developing countries and leading technology firms to double public and private funding for connectivity, with the aim of connecting 1.5 billion people by 2020. The success of incubators and science, technology and innovation parks in bringing together innovators, regulators, entrepreneurs and patent officials to foster innovation in the cases of Georgia, Thailand, the Islamic Republic of Iran and China were discussed. The example of Global Innovation Exchange, an online platform to share innovative ideas and secure finances for the same, was also discussed. Country groups were also engaging in new collaborations and initiatives in the science, technology and innovation field at the global level. For example, during China's presidency of the Group of 20, a ministerial conference on science, technology and innovation would be organized, in 2016, to highlight the potential of science, technology and innovation for responding to development challenges. Sweden shared the importance of "Grand Challenges" on different sustainable development issues as an instrument that could bring together different stakeholders and stimulate cross-sector innovation. The International Council for Science shared its experience with regard to new collaborations, such as the International Network for Government Science Advice and "Future Earth", an international research platform. There was broad consensus that such collaborations needed to be encouraged in order to tackle the challenges of sustainable development, which cut across national boundaries and the boundaries of traditional disciplines.

Fully exploiting synergies between all United Nations efforts relating to science, technology and innovation

12. Participants noted with appreciation the efforts made by the United Nations Conference on Trade and Development, especially in terms of the science, technology and innovation policy reviews in enhancing science, technology and innovation policy capacity. Several countries, including Botswana, Ethiopia, Kenya, Mauritius and Pakistan expressed interest in science, technology and innovation policy reviews being undertaken in those countries in the future. The session also took note of the newly established Technology Facilitation Mechanism of the United Nations as well as science, technology and innovation capacity-building efforts organized by other United Nations system entities, such as the United Nations Educational, Scientific and Cultural Organization. There was general consensus that the Technology Facilitation Mechanism opened up new opportunities for synergies, through collaboration and cooperation of the Mechanism with the work of the Commission on Science and Technology for Development and that every possible effort should be made to realize that potential by combining efforts and minimizing any possible risk of duplication or overlap. The participants called for the active involvement of all members of the Commission in the first annual multi-stakeholder forum of the United Nations on science, technology and innovation, to be held in New York on 6 and 7 June 2016.

Improving the science-policy interface

13. Participants broadly agreed that there was a need for policies to be able to keep up with technology and to improve the science-policy interface. New policies that would foster innovation needed to be devised and there should be regular feedback mechanisms between the fields of science and policy. New theoretical and practical approaches to the use of scientific evidence in informing policy at all levels of government would be required. Policymakers needed to know how to harness the strengths of big data and data analytics in their decision-making. Active technology assessments and technology foresight exercises needed to be well integrated into national policymaking processes. At the same time, scientists and researchers needed to be aware of what kind of information was required by policymakers and to adjust their research priorities. For example, in the case of addressing the risks posed by natural disasters originating from climate change, better subnational climate modelling was needed to identify the human and economic impacts, as were improved early warning systems. Such information could help to make more informed policy decisions with regard to mitigation, adaptation and disaster management.